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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/669,969	09/26/2000	William Henry Pettit	H-203484	3594

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EXAMINER	
MARTIN, ANGELA J	

ART UNIT	PAPER NUMBER
1745	

DATE MAILED: 10/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/669,969	PETTIT, WILLIAM HENRY
	Examiner	Art Unit
	Angela J. Martin	1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 July 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-41* is/are pending in the application.

4a) Of the above claim(s) *10-13,19-34,40 and 41* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9,14-18 and 35-39* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *9/26/00*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Claims 10-13, 19-34, 40, 41 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected system, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on July 20, 2004.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-7 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Khandkar et al., U.S. Pat. No. 5,763,114.

Rejection of claims 1-7 and 9 drawn to a fuel cell system.

Khandkar et al., teach a fuel cell system comprising a reaction vessel having a catalyst carried in the vessel for endothermic reaction, and comprising at least a first and second heat exchanger spaced apart from each other within the vessel, and wherein the devices are independently controlled so that heat transferred by the heat exchangers to the catalyst, and the temperature of the catalyst, may be varied at different locations within the reaction vessel corresponding to the location of the heat exchanger devices (col. 5, lines 46-67 and col. 6, lines 1-2). It teaches exothermic

reactants comprising a fuel and oxidant, and each of the heat exchangers includes at least one combustion chamber, and a catalyst for promoting chemical combustion is in each combustion chamber and at least one fuel and oxidant are selectively charged to each combustion chamber in a controlled amount so that heat generated by each of the heat exchanger devices may be varied as desired (col. 8, lines 36-40). It also teaches a plurality of endothermic reaction sections and a plurality of heat transfer devices, wherein each endothermic reaction section has a heat transfer device associated therewith to supply sufficient heat to control the temperature profile of the associated endothermic reaction section within a predetermined range (col. 4, lines 19-30 and lines 53-55). Additionally, it teaches the endothermic reaction sections are spaced apart and the heat transfer device is positioned between two spaced apart endothermic reaction sections (col. 3, lines 48-59). It teaches each heat transfer device comprises at least one catalytic combustion chamber having a catalyst (col. 8, lines 50-55). It also teaches the combustion fuel mixture comprises an anode and cathode exhaust (col. 8, lines 36-38). In addition, it teaches endothermic reaction section includes a catalyst supported on ceramic (col. 6, lines 65-67 and col. 7, lines 1-6). It also teaches the exhaust from a first endothermic reaction section flows over a heat transfer device before flowing into a second endothermic reaction section (col. 4, liens 19-30).

Thus, the claims are anticipated.

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 14-18 are rejected under 35 U.S.C. 102(e) as being anticipated by Edlund et al., U.S. Pat. No. 5,997,594.

Rejection of claims 14-18 drawn to a fuel cell system.

Edlund et al., teach a fuel cell system comprising a reaction vessel integrating an exothermic and endothermic reaction, the vessel including a substrate having a first and second surface, and an endothermic reaction catalyst overlying the first surface, and an exothermic reaction catalyst overlying the second surface, and wherein the substrate is constructed and arranged to transfer heat from the second surface to the first surface (abstract). It also teaches the first and second surfaces are on opposite sides of the substrate (Fig. 3); wherein the substrate is substantially flat planar (Fig. 10). It teaches a fuel cell system comprising an integrated exothermic and endothermic reaction vessel having an exothermic and endothermic reaction chamber, and a substrate separating the chambers, wherein the substrate has a first surface facing toward the exothermic chamber and including an exothermic reaction catalyst overlying the first surface, and the substrate has a second surface facing toward endothermic reaction chamber and including an endothermic reaction catalyst overlying the second surface, and the reactants may be selectively supplied to the exothermic chamber to produce reaction products and heat, and at least a portion of the heat is transferred through the substrate to the second surface to drive an endothermic reaction (col. 2, lines 41-65). It teaches a

fuel cell system comprising an integrated chemical combustion and fuel reformation vessel and a substrate separating the chambers, including a combustion catalyst overlying the first surface and a reformation catalyst overlying the second surface, and supplying combustion reactants to the chemical combustion chamber to produce combustion products and heat, and at least a portion of the heat is transferred through the substrate to the second surface to selectively reform a desired amount of fuel supplied to the fuel reformation chamber (col. 4, lines 8-51).

Thus, the claims are anticipated.

5. Claims 35-39 are rejected under 35 U.S.C. 102(e) as being anticipated by Matsuda et al., U.S. Pat No. 6,472,092 B1.

Rejection of claims 35-39 drawn to a fuel cell system.

Matsuda et al., teach a fuel cell system comprising a reaction vessel including a vaporizer section and a heat transfer device, and a plurality of endothermic reaction sections, and a plurality of heat transfer devices, wherein each endothermic section has a heat transfer device associated therewith to supply sufficient heat to control the temperature profile of the associated endothermic reaction section within a predetermined range (col. 1, lines 13-28 and lines 37-59; col. 6, lines 19-33). It teaches a plurality of endothermic and exothermic reaction sections, wherein the exothermic reaction section includes a catalyst for combusting a fuel (col. 6, lines 64-67 and col. 7, lines 1-9); exothermic section charges hydrogen and oxygen into the exothermic reaction chamber and chamber is constructed and arranged to conduct a preferential oxidation (col. 6, lines 6-18).

Thus, the claims are anticipated.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Khandkar et al., U.S. Pat. No. 5,763,114, in view of Lesieur, U.S. Pat. No. 6,707,244 B1.

Rejection of claim 8 drawn to a fuel cell system.

Khandkar et al., teach a fuel cell system as described above.

Lesieur , teach a fuel cell system wherein endothermic reaction sections include catalyst supported on a foam (col. 2, lines 32-41).

Thus, it would have been obvious at the time the invention was made to insert the teachings of Lesieur into the teachings of Khandkar et al., because a foam support provides an increased surface area, which provides enhanced catalytic activity.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Angela J. Martin whose telephone number is 571-272-1288. The examiner can normally be reached on Monday-Friday from 9:00 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AJM